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## TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.  
149-0046USIn Application Of: Melody Vos &  
Jeff Slavin

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/990,770	November 21, 2001	Charles Rones	29855	2175	1825

Invention: DATABASE MANAGEMENT SYSTEM AND METHOD WHICH MONITORS ACTION RESULTS  
AND ADJUSTS USER PARAMETERS IN RESPONSECOMMISSIONER FOR PATENTS:Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal  
filed on December 7, 2004.

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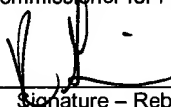
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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant(s):	§	
Melody Vos and Jeff Slavin	§	Art Unit: 2175
	§	
Serial No.: 09/990,770	§	Examiner: Charles Rones
	§	
Filed: November 21, 2001	§	Docket No.: 149-0046US
	§	
For: Database Management System and	§	Customer No.: 29855
Method which Monitors Action	§	
Results and Adjusts User Parameters	§	
In Response	§	
	§	

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**APPEAL BRIEF**

This is an appeal from the rejection of claims 1-45 in the Advisory Office Action dated November 16, 2004 and Final Office Action dated July 12, 2004.

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**REAL PARTY IN INTEREST**

The real party in interest in the above referenced patent application is BMC Software, Inc. of Houston, Texas.

**RELATED APPEALS AND INTERFERENCES**

To the present knowledge of Appellants' representative, there are currently no related appeal or interference proceedings that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the present Appeal.

**STATUS OF CLAIMS**

In the aforementioned Final Office Action, claims 1-45 were rejected. Claims 1-45 are appealed.

**STATUS OF AMENDMENTS**

A Reply was filed on October 7, 2004 responsive to the Final Office Action mailed July 12, 2004. An Advisory Action was mailed on November 16, 2004. No amendments have been filed subsequent to the Final Office Action.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

Applicants' claimed subject matter is directed to database management. As noted in the Background section of the present Specification, database management is often complex and fraught with difficulty. Prior art database management requires database administrators to have comprehensive training and knowledge of a database system, such as the solutions, tools, and utilities available to manage the database system. *See present Specification* at page 1, ll. 24-28. In addition, prior art database management requires manual intervention of skilled database administrators to manage the database. *See Id.* at page 2, ll. 1-5.

In contrast to the prior art, independent claims 1, 16, and 31 are directed to database management that is automated. Applicants' automated database management (referred to as an "Object Advisor" in the present specification) is directed to reducing the need for the intervention by administrators and to reducing the level of skill required by the administrators. *See Id.* at page 17, ll. 13-14. In addition, the automated database management is directed to maximizing system resources in management of the database. *See Id.* at page 18, ll. 11-22.

Applicants' automated database management determines actions to modify database objects. *See e.g., Id.* at steps 502-520 806, 816, 836, 856, 874, and 894 in Figs. 5, 8-12, and 14. The determined actions can include actions required to correct an actual problem indicative of concerns about the performance of the database management system or concerns about the availability of database objects. *See Id.* at page 16, ll. 13-17. In addition, the determined actions may be the most effective action for correcting a problem and can include any additional action that should be performed to prevent new or associated problems. *See Id.* at page 18, ll. 1-3.

Furthermore, the determined actions can include proactive changes that can be made to improve the performance of the database objects. *See Id.* at page 24, ll. 20-22. For example, the determined action can involve spreading data across existing data sets or creating a new data set. *See Id.* at page 24, line 25 to page 25, line 7. In another example, the determined action can involve relocating specific datasets that are not to be located on the same DASD volume(s). *See Id.* at page 25, ll. 9-16. In yet another example, the determined action can involve allocating free space by a REORG utility or reducing frequent reorganization of database objects. *See Id.* at page 25, ll. 18-27. Finally, the determined action can involve turning off compression, applying



compression to objects that would benefit, or determining the most effective compression algorithm for specific objects. *See Id.* at page 26, ll. 1-9.

Once the actions to modify the database objects have been determined, Applicants' automated database management performs those determined actions on the database objects. *See e.g.*, steps 522, 810, 820, 840, 858, and 876 in Figs. 5 and 8-12. For example, Execution Management Components build, manage, and execute a requested workload of determined actions. *See Specification* at page 18, ll. 27-28. The Execution component may enable the Object Advisor to automate error handling, ensure that objects remain usable, and invoke the appropriate utility or command for executing the determined action. *See Id.* at page 20, ll. 12-15.

When the actions are performed, Applicants' automated database management monitors the results of performing the actions. *See e.g., Id.* at steps 824, 844, and 860 in Figs. 9-11. Monitoring the results can be preformed using the Data Collection Components to gather information about the database objects. *See Id.* at page 15, line 6-11. For example, the Data Collection Components can include an object usage collector 602, an object usage monitor 604, and an object statistics collector 610. *See Id.* at page 15, line 14 to page 16, line 10 and Figure 6. In addition, monitoring the results can be preformed using a Status Handling and Reporting component, which monitors completion of tasks and performs cleanup processing. *See Id.* at page 20, ll. 20-28.

Based on the monitored results, Applicants' automated database management reconfigures one or more policies or definitions associated with the database. *See Id.* at page 29, ll. 19-20 and step 862 in Fig. 11. The definitions "may include a set of rules which, when applied to the DBMS catalog, results in a list of database objects." *Id.* at page 21, ll. 13-14. These rules define the logical grouping of objects and may be stored in the Object Advisor Repository 646 of Figure 6. *See Id.* at page 21, ll. 14-16. The policies "include rules that may govern how objects and actions are managed by components." *Id.* at page 22, ll. 13-14. The policies may instruct the Object Advisor on what actions to perform and when and how to perform those actions. *See Id.* at page 22, ll. 15-17.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1 to 45 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S.  
Patent No. 6,282,570 to Leung et al.

## ARGUMENT

Applicants respectfully traverse the rejection contending that U.S. Patent No. 6,282,570 to Leung et al. ("Leung") anticipates claims 1-45 under 35 U.S.C. § 102(e) in so far as Leung does not teach or suggest all the limitations in these claims. "For a prior art reference to anticipate in terms of 35 U.S.C. 102, every element of the claimed invention must be identically shown in a single reference." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677 (Fed. Cir. 1988). Further, the "identical invention must be shown in as complete detail as is contained in the patent claim" (*Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir.), *cert. denied*, 493 U.S. 853 (1989)), and the "elements must be arranged as in the claim under review" (*In re Bond*, 910 F.2d 831, 832 Fed. Cir. 1990), *reh'g denied*, 1990 U.S. App. LEXIS 19971 (Fed. Cir. 1990)). *See also* M.P.E.P. 2131. Therefore, for Leung to anticipate claims 1-45, Leung must disclose each element contained in the claims, and there must be no difference between the claimed invention and the disclosure of Leung.

Each of Applicants' claims 1 to 45 is directed to automated database management. To manage a database, the automated database management of each claim requires that actions to modify one or more database objects<sup>1</sup> of the database be determined. The determined actions<sup>2</sup> are performed on the database objects, and the results are monitored. Based on the monitored results, one or more policies<sup>3</sup> or definitions<sup>4</sup> associated with the database are reconfigured.

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<sup>1</sup> Database objects can be data stored in a database of a storage device or file server (224). *See e.g.*, Present Specification at page 12, ll. 10-13.

<sup>2</sup> Actions to modify database objects can be actions to correct performance of the database management system, to prevent new or associated problems, to spread data across existing data sets, to create a new data set, to relocate specific datasets, to allocate free space by a REORG utility, to reduce frequent reorganization of database objects, to turn off compression, to apply compression, or to determine the most effective compression algorithm for specific objects. *See e.g.*, *Id.* at page 16, ll. 13-17; page 18, ll. 1-3; page 24, line 25 to page 25, line 7; page 25, ll. 9-16; page 25, ll. 18-27; and page 26, ll. 1-9.

<sup>3</sup> Policies associated with a database are defined as rules that may govern how database objects and actions are managed by components, and the policies may instruct what actions are to be performed and when and how to perform those actions. *See e.g.*, *Id.* at page 22, ll. 13-17.

<sup>4</sup> Definitions associated with a database are defined as a set of rules which, when applied to a database catalog, produces a list of database objects. *See e.g.*, *Id.* at page 21, ll. 13-14.

**A. Leung Fails to Disclose Database Management that (1) Determines Actions to be Performed on Database Objects to Modify the Objects and (2) Performs Those Determined Actions.**

The Final Office Action contends that Leung discloses “determining actions to be performed on one or more database objects to modify the one or more database objects” and “performing the actions on the database objects” at Abstract, col. 4, ll. 1-25, col. 5, ll. 21-55, col. 8, ll. 41-65, and col. 10, ll. 22-54 of Leung. *See Final Office Action* at page 3. Applicants submit that Leung fails to disclose automated database management that determines actions to modify database objects and performs those determined actions on the database objects, as required by each of Applicants’ claims 1-45.

In contrast to Applicants’ claimed invention, Leung is directed to monitoring the performance of a parallel database in a computer. Leung discloses a database monitor (206) that collects “performance statistics of database nodes based on instructions from the user.” Leung at col. 4, ll. 10-11 and Fig. 2. In an illustrative example of the objectives of Leung’s database monitor (206), Leung discloses that “users define what the database monitor does (*e.g.*, a user may define which database instance to monitor). For example, a user may want to monitor the performance of a particular table in a database. Specifically, the user may want to check whether a table increases beyond a certain number of rows. If the table increases beyond a certain number of rows, the user may want the database monitor to prune the database. ***In both cases, the user defines what the database monitor does.***” (emphasis added) *Id.* at col. 4, ll. 17-25.

As noted previously, each of Applicants’ claims is directed to automated database management. The automated database management of each of Applicant’s claims requires that actions to modify database objects be determined and further requires that the determined actions be performed on the database objects. In contrast, the database monitor (206) in Leung does not determine actions to modify database objects. Rather, Leung’s database monitor (206) requires the intervention of a user to define what the database monitor (206) does. Moreover, because Leung does not determine actions, Leung further fails to perform such determined actions, as is also required by Applicants’ claims. Therefore, Leung cannot anticipate claims 1-45 because Leung does not disclose all of the limitations of Applicants’ claims 1-45.

**B. Leung Fails to Disclose Database Management that (1) Monitors Results of Performing Actions on Database Objects and (2) Reconfigures Policies or Definitions Based on the Monitored Results.**

The Final Office Action contends that Leung discloses “monitoring results of the performing the actions on the database objects; and reconfiguring one or more policies or definitions associated with the database based on the monitoring the results of the performing the actions on the database objects” at Abstract, col. 4, ll. 1-25, col. 5, ll. 21-55, col. 8, ll. 41-65, and col. 10, ll. 22-54 of Leung. *See Final Office Action* at page 3. Applicants submit that Leung fails to disclose automated database management that monitors the results of performing determined actions to modify database objects and that reconfigures one or more policies or definitions associated with the database based on the monitored results, as required by each of Applicants’ claims 1-45.

In contrast to Applicants’ claimed invention, Leung is directed to a database monitor (206) used “to increase the precision of monitoring results returned to a user after successive iterations of monitoring” Leung at col. 2, ll. 26-27. In addition, Leung is directed to a database monitor (206) used “to return the best results possible within a defined time limit and to minimize overhead across all nodes” *Id.* at col. 2, ll. 29-30; *See also* col. 13, ll. 46-48. To achieve these objectives, Leung discloses using time limits for collecting performance statistics and discloses using dynamic grouping and sequential sampling of parallel databases when processing a database monitor. *See Id.* at col. 5, ll. 21-55 and col. 6, ll. 1-6.

The time limits associated with collecting statistics addresses problems with scalability for a large parallel database. These time limits may be defined by a monitoring application, which collects monitoring statistics and returns a performance value. *See* Leung at col. 5, ll. 28-35. Likewise, sequential sampling is used to collect performance data from a group of database nodes. *See Id.* at col. 8, ll. 41-65. Using time limits and sequential sampling to achieve its monitoring objectives, Leung discloses steps performed by a monitoring system (122). The monitoring system (122) uses the time limits, lists of nodes in a database group, and lists of snapshot buffers to monitor the database and collect performance statistics. *See Id.* at col. 10, ll. 22-54.

As noted previously, the automated database management of each of Applicants' claims requires that the actions performed on database objects be monitored and requires that one or more policies or definitions associated with the database be reconfigured based on the monitored results. Even though Leung does not determine actions to modify database objects and does not then perform those determined actions, Leung also does not disclose monitoring results of performing such determined actions and reconfiguring policies or definitions based on such monitored results. Rather, Leung discloses that the database monitor (206) and monitoring system (122) merely collect performance statistics of a parallel database in a reliable and timely fashion. Therefore, Leung cannot anticipate Applicants' claims 1-45 because Leung does not disclose all of the limitations of Applicants' claims 1-45.

**C. Teachings of Leung Do Not Provide Applicants' Claimed Limitations as Contended in the Final Office Action**

Finally, the Final Office Action contends that Leung teaches that "data is collected on database nodes and resource constraints are changed based on database activity" and that such teachings "are deemed to provide Applicants' limitations." *Final Office Action* at page 7. Applicants disagree with the contention that Leung provides any of the claimed limitations.

Support for the contention in the Final Office Action appears to come from Leung's discussion of sequential sampling of parallel databases. With regard to sequential sampling, Leung states that "the sampling size is adjusted dynamically to adapt itself to the changes in resource constraints. Resource constraints are related to changes in database activity and changes in central processing unit ('CPU') workload." Leung at col. 8, ll. 51-55. These teachings of Leung do not provide any limitations of Applicants' claims. Namely, adjusting sampling sizes based on resource constraints is not determining actions to be performed to modify database objects, performing those determined actions, monitoring the performance of the determined actions, nor reconfiguring policies or definitions associated with the database based on the monitored results. Rather, adjusting sampling sizes based on resource constraints as disclosed in Leung is directed to collecting performance data efficiently. Consequently, the teachings of Leung do not provide Applicants' claimed limitations.

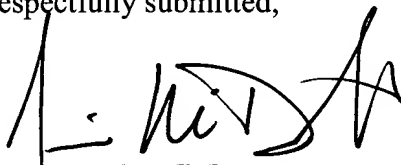
**D. Conclusion**

Leung does not teach or suggest all of the limitations of Applicants' claims 1-45. At most, Leung discloses collecting performance statistics of a parallel database. The collection of performance statistics is specified by a user and is done in a timely, reliable manner using time limits, grouping, and sampling. Therefore, Leung cannot anticipate Applicants' claims 1-45, and Applicants respectfully request that the Board grant Applicants' appeal and withdraw the rejection of claims 1-45 under 35 U.S.C. § 102(e) to Leung.

Respectfully submitted,

Feb. 7, 2005

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**CLAIMS APPENDIX**

1. (Previously Presented) An automated database management method comprising:  
  
determining actions to be performed on one or more database objects to modify the  
  
one or more database objects, wherein a database comprises the one or more  
  
database objects;  
  
performing the actions on the database objects;  
  
monitoring results of the performing the actions on the database objects; and  
  
reconfiguring one or more policies or definitions associated with the database based  
  
on the monitoring the results of the performing the actions on the database  
  
objects.
2. (Original) The database management method of claim 1, further comprising:  
  
automatically determining a schedule for performing the actions on the database  
  
objects,  
  
wherein the performing the actions on the database objects comprises performing the  
  
actions on the database objects based on the schedule.
3. (Original) The database management method of claim 2, wherein the performing the  
actions on the database objects based on the schedule comprises automatically performing the  
actions on the database objects based on the schedule.



4. (Original) The database management method of claim 1, further comprising:  
confirming the performing the actions on the database objects.
5. (Original) The database management method of claim 1, further comprising:  
collecting statistics relating to operation of a database; and  
determining characteristics of the database objects.
6. (Original) The database management method of claim 5, wherein the determining the characteristics of the database objects comprises automatically determining the characteristics of the database objects.
7. (Original) The database management method of claim 5, wherein the determining the actions to be performed on the database objects comprises determining the actions to be performed on the database objects based on the characteristics of the database objects.
8. (Original) The database management method of claim 7, wherein the determining the actions to be performed on the database objects based on the characteristics of the database objects comprises automatically determining the actions to be performed on the database objects based on the characteristics of the database objects.
9. (Original) The database management method of claim 5, wherein the statistics comprise object-level statistics.

10. (Original) The database management method of claim 5, wherein the statistics comprise activity-level statistics.

11. (Original) The database management method of claim 5, wherein the determining the characteristics of the database objects comprises determining the characteristics of the database objects using the collected statistics.

12. (Original) The database management method of claim 5, wherein the determining the characteristics of the database objects comprises determining the characteristics of the database objects using the one or more policies.

13. (Original) The database management method of claim 5, wherein the determining the characteristics of the database objects comprises determining the characteristics of the database objects using the one or more definitions.

14. (Original) The database management method of claim 1, further comprising:  
customizing the one or more definitions.

15. (Original) The database management method of claim 1, further comprising:  
customizing the one or more policies.

16. (Previously Presented) A carrier medium comprising program instructions, wherein the program instructions are computer-executable to implement:

determining actions to be performed on one or more database objects to modify the one or more database objects, wherein a database comprises the one or more database objects;

performing the actions on the database objects;

monitoring results of the performing the actions on the database objects; and

reconfiguring one or more policies or definitions associated with the database based on the monitoring the results of the performing the actions on the database objects.

17. (Original) The carrier medium of claim 16, wherein the program instructions are further computer-executable to implement:

automatically determining a schedule for performing the actions on the database objects, wherein the performing the actions on the database objects comprises performing the actions on the database objects based on the schedule.

18. (Original) The carrier medium of claim 17, wherein the performing the actions on the database objects based on the schedule comprises automatically performing the actions on the database objects based on the schedule.

19. (Original) The carrier medium of claim 16, wherein the program instructions are further computer-executable to implement:

confirming the performing the actions on the database objects.

20. (Original) The carrier medium of claim 16, wherein the program instructions are further computer-executable to implement:

collecting statistics relating to operation of a database; and  
determining characteristics of the database objects.

21. (Original) The carrier medium of claim 20, wherein the determining the characteristics of the database objects comprises automatically determining the characteristics of the database objects.

22. (Original) The carrier medium of claim 20, wherein the determining the actions to be performed on the database objects comprises determining the actions to be performed on the database objects based on the characteristics of the database objects.

23. (Original) The carrier medium of claim 22, wherein the determining the actions to be performed on the database objects based on the characteristics of the database objects comprises automatically determining the actions to be performed on the database objects based on the characteristics of the database objects.

24. (Original) The carrier medium of claim 20, wherein the statistics comprise object-level statistics.

25. (Original) The carrier medium of claim 20, wherein the statistics comprise activity-level statistics.

26. (Original) The carrier medium of claim 20, wherein the determining the characteristics of the database objects comprises determining the characteristics of the database objects using the collected statistics.

27. (Original) The carrier medium of claim 20, wherein the determining the characteristics of the database objects comprises determining the characteristics of the database objects using the one or more policies.

28. (Original) The carrier medium of claim 20, wherein the determining the characteristics of the database objects comprises determining the characteristics of the database objects using the one or more definitions.

29. (Original) The carrier medium of claim 16, wherein the program instructions are further computer-executable to implement:

customizing the one or more definitions.

30. (Original) The carrier medium of claim 16, wherein the program instructions are further computer-executable to implement:

customizing the one or more policies.

31. (Previously Presented) A database management system comprising:
- a CPU;
  - a database coupled to the CPU, wherein the database comprises one or more database objects;
  - a memory coupled to the CPU, wherein the memory stores program instructions which are executable by the CPU to:
    - determine actions to be performed on the database objects to modify the database objects;
    - perform the actions on the database objects;
    - monitor results of the performing the actions on the database objects; and
    - reconfigure one or more policies or definitions associated with the database based on the monitoring the results of the performing the actions on the database objects.
32. (Original) The database management system of claim 31, wherein the program instructions are further executable by the CPU to:
- automatically determine a schedule for performing the actions on the database objects,
  - wherein in performing the actions on the database objects, the program instructions are further executable by the CPU to perform the actions on the database objects based on the schedule.

33. (Original) The database management system of claim 32, wherein in performing the actions on the database objects based on the schedule, the program instructions are further executable by the CPU to automatically perform the actions on the database objects based on the schedule.

34. (Original) The database management system of claim 31, wherein the program instructions are further executable by the CPU to:

confirm the performing the actions on the database objects.

35. (Original) The database management system of claim 31, wherein the program instructions are further executable by the CPU to:

collect statistics relating to operation of a database; and  
determine characteristics of the database objects.

36. (Original) The database management system of claim 35, wherein in determining the characteristics of the database objects, the program instructions are further executable by the CPU to automatically determine the characteristics of the database objects.

37. (Original) The database management system of claim 35, wherein in determining the actions to be performed on the database objects, the program instructions are further executable by the CPU to determine the actions to be performed on the database objects based on the characteristics of the database objects.

38. (Original) The database management system of claim 37, wherein in determining the actions to be performed on the database objects based on the characteristics of the database objects, the program instructions are further executable by the CPU to automatically determine the actions to be performed on the database objects based on the characteristics of the database objects.

39. (Original) The database management system of claim 35, wherein the statistics comprise object-level statistics.

40. (Original) The database management system of claim 35, wherein the statistics comprise activity-level statistics.

41. (Original) The database management system of claim 35, wherein in determining the characteristics of the database objects, the program instructions are further executable by the CPU to determine the characteristics of the database objects using the collected statistics.

42. (Original) The database management system of claim 35, wherein in determining the characteristics of the database objects, the program instructions are further executable by the CPU to determine the characteristics of the database objects using the one or more policies.

43. (Original) The database management system of claim 35, wherein in determining the characteristics of the database objects, the program instructions are further executable by the CPU to determine the characteristics of the database objects using the one or more definitions.



44. (Original) The database management system of claim 31, wherein the program instructions are further executable by the CPU to:

customize the one or more definitions.

45. (Original) The database management system of claim 31, wherein the program instructions are further executable by the CPU to:

customize the one or more policies.

**EVIDENCE APPENDIX**

- U.S. Patent No. 6,282,570 to Leung et al. – First cited by the Examiner in the Office Action mailed February 13, 2004.